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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/642,649 | 08/19/2003 | Peter Deane | PAT 2139-2-US | 3737 |
| 26123 7590 09/18/2008 BORDEN LADNER GERVAIS LLP Anne Kinsman WORLD EXCHANGE PLAZA 100 QUEEN STREET SUITE 1100 OTTAWA, ON K1P 1J9 CANADA | | | | |
| EXAMINER | | | | |
| TSEGAYE, SABA | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2619 | | | | |
| NOTIFICATION DATE | | DELIVERY MODE | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipinfo@blgcanada.com
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Office Action Summary

Application No.

10/642,649

Applicant(s)

DEANE ET AL.

Examiner

SABA TSEGAYE

Art Unit

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/11/08 has been entered.
2. Claims 1-19 are pending. Currently no claims are in condition for allowance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 6-8, 10, 11 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6, line the phrase “said at least N-1 number of modulators” lacks antecedent basis.

Claim 18 is vague in that the preamble recited an “apparatus” while the parent claims 12, 14 and 16 are method claims.

Claim Rejections - 35 USC § 103

5. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott (US 6,522,642 B1) in view of Lam (US 6,721,506).

Regarding claims 1-4 and 12, Scott discloses, in figs. 2 and 4, an apparatus for processing N number of input signals having a common frequency, said apparatus comprising:

at least N-1 number of serrodyne (also known **single sideband generator**) modulators (column 4, lines 12-13; 17-25) for modulating N-1 of said N number of input signals into N-1 number of modulated signals (column 3, lines 34-47);

a combiner for combining said modulated signals along with one non-modulated signal into an aggregate signal (column 4, lines 32-35);

N-1 number of demodulators for demodulating said aggregate signal, each said demodulator corresponding to one of said modulators (column 6, lines 1-6; column 13, lines 16-25); and

N number of duplexer filters each corresponding to one of said N number of input signals (column 4, line 65-column 15, line11);

wherein said demodulators, and said duplexer filters, are arranged so as to pass N number of demodulated portions of said aggregate signal to a corresponding output and each of said demodulated portions being substantially identical to one of said N number of input signals (column 4, line 65-column 15, line11).

Scott does not disclose number of circulators for receiving at least part of aggregate signal.

Lam teaches that cascaded grating **circulator** arrangements may be used to transmit and/or receive WDM data link. Using a chirped fiber Bragg grating coupled to and optical

circulator in the transmitter and/or receiver used in a WDM PON to select one or more FSR's to be delivered to user nodes. The chirped FBG optical circulator wavelength add/drop technique is useful in coarse WDM systems, which allow for more tolerance to wavelength shifting (column 11, lines 5-34; column 3, lines 5-29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a plurality of circulators, such as suggested by Lam, to the system of Scott in order to avoid delay and building up dispersion in the signal pulses (column 11, lines 25-37).

Regarding claim 5, Scott discloses the apparatus wherein said length of cabling spans at least a portion of an antenna structure (column 9, lines 20-28).

Regarding claim 6, Scott discloses the apparatus, further including a plurality of amplifiers each located such that said input signals pass through a respective one of said plurality of amplifiers prior to passing through said at least N-1 number of modulators (column 3, lines 7-11; column 4, lines 35-40).

Regarding claims 7, 13 and 14, Scott discloses the apparatus wherein said input signals are forward link transmissions and said plurality of amplifiers are high power amplifiers (column 4, lines 35-40; column 6, lines 45-51).

Regarding claims 8 and 15, Scott discloses the apparatus wherein said input signals are reverse link transmissions and said pluralities of amplifiers are low power preamplifiers (column 6, lines 45-51).

Regarding claims 9 and 16, Scott discloses the apparatus wherein said input signals are forward link transmissions and said apparatus further includes a single high power amplifier for amplifying said aggregate signal, said high power amplifier located between said combiner and said length of cabling (column 6, lines 45-51).

Regarding claims 10 and 17, Scott discloses the apparatus wherein said serrodyne modulators are low loss, high power RF frequency translators (column 4, lines 5-31).

Regarding claims 11 and 18, Scott discloses the apparatus wherein said serrodyne modulators operate via a modulation scheme using multi-bit Serrodyne (column 4, lines 12-13; 17-25; column 8, lines 14-29).

Regarding claim 19, Scott discloses an apparatus for processing N number of modulated, combined, and amplified input signals having a common frequency, said apparatus comprising:
a demodulator for demodulating an amplified aggregate signal consisting of said input signals, said demodulator including (column 6, lines 1-6; column 13, lines 16-25),
N-1 number of serrodyne demodulators (column 5, lines 54-64) for demodulating said aggregate signal (column 11, lines 1-25); and

N number of duplexer filters each corresponding to one of said N number of input signals (column 4, line 65-column 15, line11);

wherein said demodulators, and said duplexer filters are arranged so as to pass N number of demodulated portions of said aggregate signal to a corresponding output, each of said demodulated portions being substantially identical to one of said N number of input signals (column 4, line 65-column 15, line11).

Scott does not disclose number of circulators for receiving at least part of aggregate signal.

Lam teaches that cascaded grating **circulator** arrangements may be used to transmit and/or receive WDM data link. Using a chirped fiber Bragg grating coupled to and optical circulator in the transmitter and/or receiver used in a WDM PON to select one or more FSR's to be delivered to user nodes. The chirped FBG optical circulator wavelength add/drop technique is useful in coarse WDM systems, which allow for more tolerance to wavelength shifting (column 11, lines 5-34; column 3, lines 5-29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a plurality of circulators, such as suggested by Lam, to the system of Scott in order to avoid delay and building up dispersion in the signal pulses (column 11, lines 25-37).

Response to Arguments

6. Applicant's arguments filed 08/11/08 have been fully considered but they are not persuasive. Applicant argues (Remarks, pages 6-7) that "*dispersion is simply not an issue in a*

backhaul cable of Scott's system due the short length of cable that would be used in a base station." Examiner respectfully disagrees. Scott discloses, in fig. 1 (background of the invention), that antennas are located **at distance** from receiver electronics 102 and a separate backhaul cable 105 couples that receiver electronics 102 to each of the antennas with a physical separation between the antennas and the receiver is **large** (column 1, lines 36-50). The invention of Scot shows in Fig. 2 that a single backhaul cable is used in order to minimize the number of backhaul cables needed for a plurality of antennas that can be costly. This shows that the backhaul cable length of Scott's system is not short and that dispersion can be an issue. Therefore, as mentioned previously in the rejection claims 1, 12 and 19, one ordinary skill in the art would have been motivated to add a plurality of circulators to the system of Scott in order to avoid delay and building up dispersion in the signal pulses.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SABA TSEGAYE whose telephone number is (571)272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. T./
Examiner, Art Unit 2619
September 12, 2008

/Wing F. Chan/
Supervisory Patent Examiner, Art Unit 2619
9/15/08